

PHNL031105

CLAIMS:

1. A user input apparatus for detecting an input position relative to the apparatus, wherein the apparatus comprises:

a light guiding layer (301), having an optical structure configured to confine a fraction (304) of light (303), incident on the apparatus from the exterior, in the light guiding layer, the incident light (303) being generated by a remote input device operable by a user for interacting with the apparatus, and configured to transmit the confined light (304) through the layer (301) towards light detecting means (303) for detecting the confined light (304) and relating the detecting of the confined light to the input position.

10 2. The apparatus of claim 1, wherein the light guiding layer (301) comprises canalizing means (302) to canalize the light (304) confined in the layer (301) in a first direction parallel to a plane of said layer (301) and in a second direction parallel to the plane of said layer (301).

15 3. The apparatus of claim 2, wherein the first direction is substantially orthogonal to the second direction.

4. The apparatus of claim 2, wherein the canalizing means (302) comprises a pyramidal shaped structure.

20 5. The apparatus of claim 2, wherein the canalizing means (402) comprises a volume holographic structure.

25 6. The apparatus of claim 1, wherein the light detecting means (203) comprises:
a first light detecting means (203) arranged to detect confined light (304) traveling in a first direction parallel to a plane of said layer (202); and
a second light detecting means (203) arranged to detect confined light (304) traveling in a second direction parallel to the plane of said layer (202).

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7. The apparatus of claim 1, comprising a display monitor.

8. The apparatus of claim 7, wherein the display monitor (102) comprises a liquid crystal display, an LED display or an electronic ink display.

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9. The apparatus of claim 7, wherein the display monitor (501) comprises an active matrix type display and wherein the light detecting means (607) is integrated with an active matrix substrate (606) of the display, further comprising light coupling means (605) configured to couple at least part of the confined light (604) from said layer (601) to the light detecting means (607).

10. The apparatus of claim 7, wherein the layer (202) is arranged at the exterior face of a screen of the display monitor.

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11. The apparatus of claim 1, further comprising:

a light guide (804) arranged at the exterior face of the layer (802) and having a light source (808) arranged to emit light (809) into the light guide (804), the light guide being optically matched with its surroundings in such way that the emitted light (809) is confined within the light guide (804) by means of total internal reflection, and is extracted from the light guide (804) and directed into the layer (802) when a user established physical contact with the apparatus at the input position.

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25 12. The apparatus of claim 1, further comprising an optical filter arranged on the light detecting means (803) to increase the selectivity for light incident on the light detecting means (803).

13. The apparatus of claim 1, further comprising an electrical signal filter arranged at the light detecting means (803) to increase the selectivity for electrical signals generated by the light detecting means (803) as a result of light impinging on said light detecting means (803).

30 14. The apparatus of claim 1, wherein the light detecting means (803) comprises a photo detector.